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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/961,287	09/25/2001	Tatsuo Uchida	2224-0189P	5315

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EXAMINER

RUDE, TIMOTHY L

ART UNIT PAPER NUMBER

2871

DATE MAILED: 02/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/961,287

Applicant(s)

UCHIDA ET AL.

Examiner

Timothy L Rude

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 11-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 11-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims

1. Claims 1-6 and 11-13 are amended. Claims 7-10 and 14 are cancelled.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honda et al (Honda) USPAT 5,851,700.

As to claim 1, Honda teaches nine examples of one embodiment of a light-scattering sheet comprising a light-scattering layer which comprises a plurality of resins (col. 3, lines 1-22) varying in refractive index (col. 3, lines 5-8) and scatters an incident light isotropically (specified haze is not anisotropic, col. 4, lines 29-65), and has a domain gap of 1 to 20 μm providing smooth diffusion (col. 4, lines 53-55) of light (overlaps Applicant's regular phase separation structure having an average interphase distance of 3 to 15 μm).

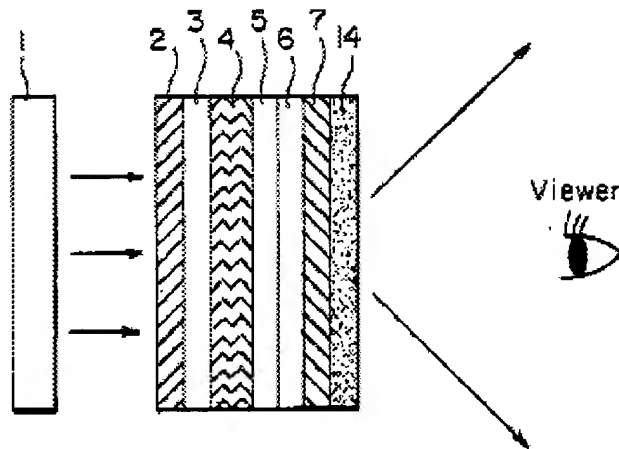


FIG. 1

The light-scattering layer of Honda has a phase separation structure composed of a plurality of resins varying in refractive index, and has a structure formed by irradiating UV light (col. 4, lines 5-8) (Applicant's spinodal decomposition, per specification page 31, lines 14-25) which would result in a bicontinuous phase structure per Applicant's enabling disclosure (Specification page 31, line 15 through page 36, line 6).

Honda discloses that the light-scattering layer preferably has a haze between 30% and 85% which equates to a ratio of a linearly transmitted light to an incident light of 15 to 70 % (overlaps Applicant's range of 0.1 to 15 %) (col. 4, lines 29-44), to widen the viewing angle, decrease the shadow area, and reduce Moiré effects which results in better display performance (col. 2, lines 20-25).

Honda does not explicitly disclose dry spinodal decomposition by heating or wet spinodal decomposition by evaporating or removing a solvent. However, Applicant's recitations as to formation by dry spinodal decomposition by heating or wet spinodal

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decomposition by evaporating or removing a solvent are product by process limitations that are considered to not further limit the resulting structure of the claimed device because Honda discloses one of the methods taught in the instant Application which are enable by Applicant's Specification to make the claimed structure.

Honda is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to use a ratio of a linearly transmitted light to an incident light of 15% or less to widen the viewing angle, decrease the shadow area, and reduce Moiré effects which results in better display performance.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to use a layer with a ratio of a linearly transmitted light to an incident light of 15% or less to widen the viewing angle, decrease the shadow area, and reduce Moiré effects which results in better display performance.

As to claims 2-4, Honda teaches a light-scattering sheet with the structure of claim 1 and having a thickness of 50 to 300 μm (overlaps Applicant's Examples, specification pages 44-48) wherein the light-scattering layer would express a light-scattering intensity profile having substantially flat area at ranges of scattering angle θ within the range 3 to 25° from a scattering center as a function of its structure, per Applicant's enabling disclosure.

As to claim 5, Honda teaches a light-scattering sheet according to Claim 1, wherein the light-scattering layer has a phase separation structure composed of a

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plurality of resins varying in refractive index, and has a structure formed by irradiating UV light (col. 4, lines 5-8) (Applicant's spinodal decomposition, per specification page 31, lines 14-25) which would result in a bicontinuous phase or an intermediate structure between the bicontinuous phase structure and a droplet phase structure per Applicant's enabling disclosure (Specification page 31, line 15 through page 36, line 6).

As to claim 6, Honda teaches his one embodiment of a light-scattering sheet is for a LCD (Title) broadly, which includes transmissive and reflective LCDs comprising transparent or reflective supports with the light-scattering layer formed on at least one side of the support.

As to claim 11, Honda provides numerous examples of applicable resins (col. 3, lines 9-22) and further teaches that a light-scattering layer may comprise any photopolymerizable monomers or oligomers (col. 3, lines 23-28) so long as they have refractive indexes which differ from each other by 0.01 or larger (Applicant's a first resin selected from the group consisting of a cellulose derivative and a (meth)acrylic resin, and a second resin selected from the group consisting of a styrenic resin, an alicyclic olefinic resin, a polycarbonate-series resin and a polyester-series resin).

As to claim 12 Honda teaches a light-scattering sheet wherein the weight ratio of the first resin to the second resin (col. 10, lines 40-43 and lines 59-62) is 9:1 to 1:9 (Applicant's 10/90 to 90/10).

As to claim 13, Honda teaches a light-scattering sheet as claimed above wherein the fluctuation width of light-scattering intensity in the flat area would be 0 to 20 when a maximum light-scattering intensity is 100 per Applicant's enabling disclosure.

Response to Arguments

3. Applicant's arguments filed on 02 October 2003 have been fully considered but they are not persuasive.

Applicant's ONLY arguments are as follows:

- (1) Honda fails to teach regularity of phase separation structure.
- (2) Since Honda discloses photopolymerization and curing with UV light, Honda fails to teach or suggest spinodal decomposition as claimed.

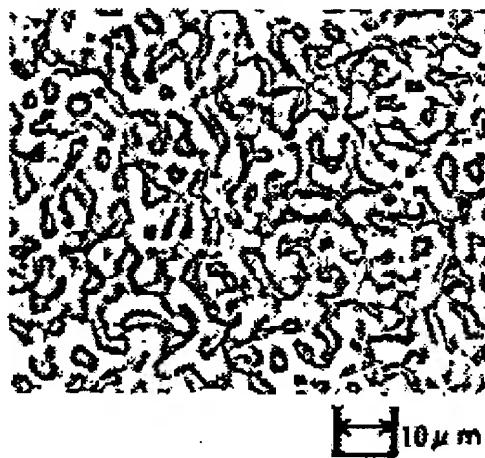
Examiner's responses to Applicant's ONLY arguments are as follows:

- (1) It is respectfully pointed out that Applicant's enabling disclosure (Specification page 31, line 15 through page 36, line 6) teaches a number of methods may be used to make the claimed invention, including the method disclosed by Honda. Examiner has considered Applicant's disclosure to be enabling, and therefore the method of Honda satisfies the steps of Applicant's ultraviolet polymerization method (Specification page 31, lines 18-24). Applicant has not cited any method as being a

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best mode, so Examiner considers all methods to be substantially equal on their merits. Examiner was not able to find any specific steps in Applicant's method of making that are directly attributable to the formation of "regular" phase separation structure that is not taught by Honda. Furthermore, Applicant's Figure 3 indicates Applicant's structure is no more regular than one would expect from the invention of Honda. Honda contrasts his invention from the regularity of a phase lattice that is known in the art to be very regular, unlike Applicant's Figure 3.

Fig. 3



(2) It is respectfully pointed out that of Honda satisfies the steps of Applicant's ultraviolet (UV light) polymerization method (Specification page 31, lines 18-24). Furthermore, since Honda satisfies one of the equivalent methods disclosed by Applicant, the dry and wet method steps are not considered to further limit the structural limitations of the device claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L Rude whose telephone number is (571) 272-2301. The examiner can normally be reached on Monday through Thursday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



tlr

Timothy L Rude
Examiner
Art Unit 2871



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